



## The Determinant Factor of Home Transformation in Bali, Indonesia

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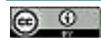
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### Abstract

In the context of providing adequate housing, a large number of people in developing countries are transforming their homes. This informal housing provision also occurs in Bali, both in BTN (National Savings Bank) housing and in traditional homes. The purpose of this study was to determine a number of determinant factors of home transformation. To achieve the objectives, this study used a survey research strategy, and two case studies were selected. Using a questionnaire as the main tool, one hundred and sixty-six respondents were interviewed. Logistic regression analysis states that both household and residential characteristics are important determinants of transformation. Two home variables, namely the size of the house and the number of original beds are good predictors. The study also shows that four household characteristics appear to be important, namely total expenditure, number of residents, type of household, and ownership.

**Keywords:** Determinant factors, Home transformation.



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### 1. Introduction

Indonesia still faces a very crucial problem in providing decent housing for the community. Although various efforts have been made, both in terms of direct housing procurement and the provision of technical and banking assistance and community empowerment, housing problems in Indonesia remain acute. One major problem is the large gap between demand and housing. Of the approximately one million houses that have to be built every year, the government can only provide a maximum of 200 thousand houses (Statistical Bureau of Bali, 2011; Sueca, 2003). In times of crisis, the government's ability to build new homes continues to decline. As a result, the gap between housing demand and supply continues to widen.

However, through its own capabilities, the community has developed and improved the condition of its home, both with and without government assistance. The transformation or development of this house has been proven in many countries to make a tremendous contribution to improving the housing conditions of the community as a whole. The studies conducted have ensured that these self-help activities are very positive contributions (Arimah, 1999; Tipple, 1992;1996;2000; UNCHS, 2001). However, in Indonesia, this study is still very marginal. Home transformation research in Indonesia is more focused on the study of the effects of cultural transformation on home transformation (Putra *et al.*, 2013; Runa, 1993; Sueca, 1997;2003), while the housing procurement side is neglected altogether. In fact, in terms of housing policy in Indonesia, this problem is the most important problem. In addition, because the proportion is substantial (around 40% of the total system of procurement of existing houses), also because this activity has an important multiplier effect.

Therefore, this research is very important, some important issues to be raised in this study, in particular to find out the determinants of housing development. What factors influence the development of houses in Bali? Do household demographic factors play an important role in home development? Are home physical factors an important factor in making decisions for the development of houses in Bali? Which is the more important factor, is it the household demographic factor or the physical factor of the house itself?

This study aims to investigate a number of factors that influence the development of houses in Bali, explain the role of demographic factors and physical factors of the house towards the development of houses in Bali, and to find out a number of determinant factors towards. The results of this study are expected to be the basis for the preparation of government intervention programs that are right on target so that the ultimate goal of housing policy in Indonesia is to improve the quality and quantity of houses can be achieved effectively.

This research is expected to contribute to the theory of various factors that influence the transformation of homes, especially those in Bali. With socio-economic and cultural conditions different from the background of housing conditions and government policies in housing in Indonesia, it is hoped that the findings of this study will enrich the existing theory. Practically, this research is expected to be a basis for determining the direction of housing program development in Indonesia, at least in determining the intervention model which is appropriate to improve housing conditions in Indonesia. By knowing the determinants of home transformation, the effectiveness of interventions can be achieved more effectively and efficiently.

## 2. Literature Review

### 2.1. Determinant Factors of Home Transformation

Although much research has been carried out in the field of home transformation, it is still difficult to determine what factors determine people to develop their homes. Some findings are similar to others, but others are totally contradictory. This is related to the complexity of the phenomenon of home transformation (Kellett *et al.*, 1993; Tipple, 2000). Nonetheless, it can be said that there are three factors that can be identified as factors influencing home transformation, namely factors related to occupants, factors related to home and the existing context.

Among the characteristics of the occupants, several factors can be identified, such as income, size and household composition, household life cycle, perceptions, preferences, motivations, and other reasons, age, gender, skills, experience, initiative, energy availability, time and so on. Residents' income is the main attraction for researchers related to home transformation. Kirwan and Martin (1972) and Seek (1983) found that variables such as income, status and financial commitment appear to be important determinants of home adjustment, especially in developed countries. However, Ziegert (1988) and Firman (1999) concluded that income is not always statistically significant. Tipple *et al.* (1997), note that income and welfare appear to generally only affect extensions to their role as empowerers or not. Ziegert added that welfare is an important determinant of home consumption. But Tipple (2000) found that well-being does not affect how extensive and how expensive a transformation must be made.

In addition to income, the size and composition of the household are important factors for deciding whether the extension is done or not, even though this factor is not as strong as the characteristics of the house itself (Tipple *et al.*, 2000). They found that the influence of household size and composition was not as important as expected. Tipple (2000) *a priori* estimates that large households are more likely to transform their homes compared to small households. In addition, mature or advanced households generally consist of more adults and are more likely to transform than those who are new to the household. The presence of adults is thought to be an important determinant, related to them requiring privacy and a larger space than children. Thus, large and mature households are an important influence factor.

The household life cycle is also considered to have an influence on the need for homes that grow up to when children leave home because they have to separate themselves from their parents, followed by a decrease in needs afterwards. This is a tendency in Western countries where children separate themselves from their parents to start their own lives. Related to this, Seek (1983) describes a mismatch between home consumption and its needs every time. Newly married couples may need only one room, but they will need more space and separate spaces when having children, and when they grow bigger and grow older. This need will decrease if children go and form new households. In this case (Tipple *et al.*, 1997) explain that increasing demand creates responses including increasing distress, moving to larger homes, improving current homes to get more spacious rooms or better services or both, or both moving and repairing.

The characteristics of houses have a dominant role in making decisions by residents to transform their homes. Through the two-stage analysis he did, Tipple *et al.* (2000) conclusively conclude that home transformation is likely to be more influenced by home characteristics, compared to household characteristics. The influence of households is not as important as predicted, compared to the characteristics of the house. The typology of houses, available technology and home environment also influence home transformation (Kellett *et al.*, 1993). Certain typologies, especially single-story houses, are relatively easier to change where others have fewer opportunities. Technology, such as types of construction and materials, can also encourage or inhibit change. For example, Tipple and Wilkinson (1991) and Arimah (1999) found that traditional engineering approaches have certain advantages. In addition, there is a strong desire to develop innovative technologies with issues of flexibility and adaptability in order to improve housing conditions by reducing costs and increasing productivity. Land characteristics, such as area, orientation, and position also influence the possibility of expansion.

Some researchers also found that transformation activities are also influenced by context factors. At a certain level, it is rather difficult to clearly distinguish or categorize context factors with a number of other factors as discussed because some of them overlap. Kellett *et al.* (1993) and Salim (1998), explicitly divide these factors into this category. In this case, he identifies the context into the geographical context (climate and earthquake activity), the economic situation, housing conditions, laws, regulations and attitudes, and the general climate of acceptance.

It has been discussed various matters related to the determinant factors of home transformation. But all of that is still diverse and probably will be a problem if applied in other countries, including Indonesia. Therefore, its application must be carried out carefully by considering the social and cultural context in which the research is conducted.

### 2.2. Initial Expectation of Home Transformation

From studies that have been done before, hypotheses or conjectures were prepared for this study. When people grow older, it's likely they will transform compared to those who are younger. Likewise, those who live longer have a close correlation with transformation. The owner is more likely to carry out a transformation than those who contract because of the relationship with rights. As a reflection of income, it is expected that expenditure will have a positive correlation with the decision for extension. People with higher education might have a better chance of getting a better job, therefore it is likely to have more money to spend and finance home expansion. They also have a better perception of home quality standards. Therefore, it might be expected that they have a greater tendency to transform their homes compared to those with lower education.

Because of the number of household members, large families are likely to expand their homes compared to the nuclear family. When children get older or have started school, the pressure on home needs increases and they need higher privacy and extra space to carry out their duties and work. This will encourage transformation. The size of the household is also predicted as the main factor for transformation. The larger the household, the more likely it is to have a positive effect on transformation. Likewise, per capita income might reflect the characteristics of household income, so those who have higher per capita income would lead to higher probability of transformation.

However, it is rather difficult to say that those who have more land have a greater possibility of transformation than those who have more land. Although there is greater opportunity on wider land, this does not mean that a house on a narrow land will not be transformed. However, with more vacant land, larger land has a greater probability of transformation than small ones. Smaller houses are more likely to be developed to be bigger, whether to improve the quality of the house or to obtain higher social status. The amount of sleeping space inside a residence is also considered an important factor in Bali, where most people sleep in this space. So, the less bed room in the house means the greater the possibility of transformation.

### 3. Research Methods

This research was held in Denpasar as one of the most densely populated and highest population growth rates in Bali. By using a survey design, the sample was selected in a randomly stratified manner by taking several locations as the research area. Two main locations were chosen, namely one traditional village and one BTN (National Saving Bank) housing complex, because these two types of houses are considered as two models of dominant housing procurement in a number of cities in Bali, where home development usually occurs intensively.

The main instrument of this study is a questionnaire as a tool for conducting structured interviews. This questionnaire will be arranged so that the main parameters of the variables studied can be measured, both qualitatively and quantitatively.

Data were analyzed statistically with the SPSS program package (Statistical Package for Social Sciences) with an analysis model of 'logistic regression' to determine the determinants of housing development in Bali. With this model, it is expected that the significance of the variables studied and their role in determining the transformation of the house will be known. The dependent variable in this study is home transformation (dummy variable), while the independent variables are household demographic conditions and physical condition of the house.

### 4. Results and Discussion

This study interviewed 166 respondents from two case locations, namely Sasetan Denpasar Village and Permata Anyar Denpasar Housing. It is not possible to analyze all the variables that were set from the beginning because of the limited number of samples. Therefore, only the strongest variables are analyzed. As an approach at the initial stage, two-way analysis and the strongest variables were used to be analyzed by looking at the level of significance, then these variables were included in the logistic regression analysis of the 90 respondents who lived in Permata Anyar Denpasar housing (BTN case), 91% were migrants from various districts in Bali and the rest were residents around the city of Denpasar. Most of them are male (72%). In general, they are young households where the median age is 36 years and most of them are nuclear families (70%). With a median income of Rp. 1,700,000.00 (170 USD) per month, they belong to the middle class family. Compared to their expenditure of Rp. 1,140,000.00 (114 USD), it seems that they can save relatively much. It should be noted here that many respondents own agricultural land in their villages that may or may not contribute to their income. One third of respondents are self-income earners (single income earners) and two fifths are both income earners (double income earners). As expected, most of them work in government (41%), followed by those who work in the private sector and entrepreneurship, one third and 14 percent respectively.

The relative welfare index of respondents may provide a more accurate picture of economic conditions. However, although this survey did not obtain data on this matter, it can be said that the majority of respondents in this housing have motorbikes, television and radio. Some of them have cars, refrigerators, sewing machines, and so on. Ownership of these items may indicate that respondents actually have higher incomes than they say.

The majority of respondents were married couples (93%), 4 percent were still single and 2 percent were widows/widowers. Respondents included well educated, of which almost two-thirds completed tertiary education, one-third of senior secondary schools, and only very few received secondary and elementary school education. This might reflect that better educated migrants have better opportunities in higher income labor markets in cities. It is interesting that the data shows that 70 percent of household members of respondents have one or more who have higher education.

BTN housing units are standard units ranging in size from 21 m<sup>2</sup> and 54 m<sup>2</sup> with a range of land from 80 m<sup>2</sup> to 100 m<sup>2</sup> or more. Units under 21 m<sup>2</sup> are intended for the weaker and lower economic groups.

In the case of selected traditional villages, namely Sasetan Denpasar Village, 76 respondents were interviewed. On average, they are older than respondents in Permata Anyar where their median age is 41 years. Likewise, their work experience is longer, 12 years. Men still dominate as head of the household (91%) and 99% are married. Fifty-four percent live with a large family and the rest are nuclear families. Total monthly income is Rp. 1,130,000.00 and they spend Rp. 1,070,000.00. In fact, they can save less than their colleagues at Permata Anyar. Conversely, most of them work in the private sector (40%). Those who work in government and entrepreneurship are each one fifth. A small proportion are retirees (3%).

In general, the education level of respondents in this traditional village environment is lower than their colleagues in Permata Anyar. Only 23 percent received higher education, and 46 percent completed high school education, and only 1 percent had elementary school education. Half of the respondents have highly educated family members. The number of workers in each household ranges from one to six people, of which one or two workers are in two-thirds of the sample.

The table below shows the results of logistic regression analysis of transformation decisions or not. In that equation, all respondents were included in the analysis. The dependent variable is coded 1 for the transformation and 0 for the opposite. Statistical indicators from the results of this analysis indicate that the model approaches reality. In this case the model describes a data suitability and correctly predicts 93 percent of those who make the transformation. Only six variables are significant in various levels that affect transformation or not. This includes two characteristics of the house (size of the original house and number of initial bedrooms), and four household characteristics (total household expenditure, number of occupants, household type, and ownership).

As shown in the [Table 1](#), the size of the original house is an important factor in transformation. This variable has a negative coefficient, which means that the smaller the original house is, the more likely it will be transformed as compared to a larger house. This finding is consistent with the initial expectations (hypotheses) and is consistent with what was found previously in Bangladesh, Egypt, Ghana and Zimbabwe ([Tippie et al., 2000](#); [Tippie, 2000](#)). In smaller homes, residents may have a smaller amount of space, living in denser conditions related to the proportion of space per person and person per room, and not enjoying adequate privacy. In Bali, it seems that households will be wider if there is empty land in the yard, and if there is a scarcity of space to accommodate the needs of residents. Conversely, households that enjoy larger dwellings are less likely to expand because they already have adequate shelter. Housing for low-income people only provides one-bedroom homes with toilets, but without a kitchen or other space. Consequently, residents need to expand before or after occupying it to get more space to accommodate household activities. This finding is similar to [Garrod et al. \(1995\)](#) and [Kardash \(1993\)](#) where those who have less space are more likely to expand compared to those who have more space.

**Table-1.** Logistic Regression of Transformation or Not (N = 166)

Variabel	Coefficient	Standard error	Odds ratio
<i>-2Log Likelihood of tested model</i>	42.725		
<i>Goodness of Fit</i>	55.072		
<i>Percent correct predicted</i>	93.37		
<i>Home variable</i>			
Original plot	-0.002	0.004	1.002
Original house	-0.096**	0.029	1.100
Original bedroom	1.410**	0.545	0.244
Original kitchen	2.258	1.798	0.104
Original KDB	-0.001	0.018	1.001
<i>Household variable</i>			
Age	-0.056	0.092	1.057
Length of stay	0.107	0.092	0.897
Estimated population	0.5796	0.649	0.560
Total expenditure	5.7E-06*	2.57E-06	1.000
Number of residents	1.111**	0.407	0.329
Oldest child age	0.151	0.106	0.859
Household size	-1.362	0.941	3.903
Income per capita	5.3E-07	3.6E-06	1.000
Work	1.498	1.316	0.223
Education	1.705	1.118	0.181
Type of household	-3.944**	1.562	51.649
Ownership	4.309**	1.540	0.013
Constant	-8.243*	4.043	

Note: \* and \*\* state the significance levels respectively at 5 and 1

The [Table 1](#) also shows that the number of initial bedrooms seems to be a strong predictor of possible transformation. The positive coefficient on this variable indicates that if there is more sleeping space then the possibility of transformation will be greater. This may seem inverse, where perhaps we hope that with limited sleeping space, people will be more interested in transforming to get more space and better privacy, whether to accommodate current needs or anticipate later needs. However, facts do not support this assumption. The explanation that can be proposed might be that those who have a bedroom have more resources and the ability to transform. They also have higher house quality standards and expectations compared to those who have little sleep space. In Ghana, [Sinai \(2001\)](#) found that households with better quality homes were more likely to make changes.

As a reflection of household income, expenditure shows an important influence on home transformation. As expected before, those who are rich are likely to make a greater transformation than those who are poor. In Bangladesh, Ghana and Egypt, [Tippie et al. \(2000\)](#) also found that income has an important effect on transformation decisions. With better financial conditions, households have a better ability to meet their transformation costs. In

Bali, especially in Denpasar, construction costs are relatively expensive. This is related to the high labor costs, high prices of materials and land. This finding contrasts with Garrod *et al.* (1995) and Shiferaw (1998) who found that per capita income has a negative coefficient which means that those who are rich in small possibilities will transform compared to those who are poor.

It is not surprising that the greater the number of household members increases the possibility of improvement. The Table 1 also indicates that this variable has a greater role in transforming decisions compared to household size, which seems insignificant. This might mean that instead of accommodating existing household members, the house is transformed to accommodate members of the household who will join, whether it's a tenant or family. More people might cause higher distress in the home, so this urges households to transform to get better conditions. It is also important to note that the motivation for gaining social prestige by owning a large house may also increase the likelihood of transformation.

Type of household is another important determinant for deciding whether or not a transformation occurs. But the results are not as expected. The Table 1 shows that core households which implicitly are small households, are more likely than large households (extended households). It is possible that large families live in multi-generation households that inherit large houses from previous generations (63% live in traditional homes). In contrast, core households mostly occupy BTN homes, and 73 percent begin their home careers in standard and small residences.

Guarantee of ownership seems to be an important factor in transformation. Those who are not owners are less likely to make a transformation compared to the owner. Most cases in developing countries, ownership is a prerequisite for transformation, but not in Bangladesh and Malaysia (Tipple, 2000). In Bali, the owner has the right to make changes to the house. In addition, tenants or owner representatives do not want to invest their money to make repairs and tend to move houses to adjust their home consumption.

## 5. Conclusions

This research produced various facts and findings. Some are in line with findings in various other countries or vice versa. In summary, it can be concluded that from the various independent variables analyzed it can be found that, both home factors and demographics of occupants both have an important role in transformation. Broadly speaking, there are six variables of home and occupant characteristics that have a significant effect on transformation decisions or not. Two of them are home characteristics and others are household characteristics. The two home variables are the size of the original house and the number of initial bedrooms, while the four household characteristics are total household expenditure, occupant number, household type, and ownership.

Moreover, from the level of significance and the number of variables that are positively correlated with transformation, it can be concluded that in the case of Bali, the characteristics of the respondents had a greater influence than the characteristics of the house. This is in contrast to what Tipple (2000) found that home characteristics are more dominant in influencing decisions for transformation or not.

Seeing such intensive self-help in expanding their homes, the government must begin to pay more attention to efforts to repair or renovate homes. The facts show that those who have large income can expand their homes without government assistance. Therefore, within the limited financial resources of the government, low income earners should be the main target in providing capital assistance, so that those who are weak economies can also immediately enjoy a decent quality home. If this goal has been achieved, then the second priority also needs to be considered, namely those with middle income because through the transformation they do, they can improve the quality of their homes while also providing accommodation for migrants or other residents who have not been able to provide their own homes. This is especially important for urban communities who are still in the early stages of their careers in fulfilling housing needs. As such, it is hoped that this will help improve housing conditions in Indonesia in general and especially in Bali. However, it must be noted that the construction of new houses must remain a routine government agenda and if necessary increase the quantity and quality.

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